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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CIRIC, LJILJANA V

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/698,180	Applicant(s) UPADHYA ET AL.	
	Examiner Ljiljana (Lil) V. Ciric	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-109 is/are pending in the application.
- 4a) Of the above claim(s) 76-93 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-75 and 94-109 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :06/26/2006;11/30/2007;12/07/2007;01/30/2008; 03/07/2008; 03/21/2008; 04/07/2008; 04/18/2008; 07/11/2008.

DETAILED ACTION

Response to Amendment

1. This Office action is in response to the reply filed on May 9, 2008.
2. Claims 1 through 109 remain in the application. Of these, claims 76 through 93 remain withdrawn from consideration as noted in greater detail below, whereas claims 1 through 75 and claims 94 through 109 have all been amended, either directly or indirectly.

Response to Arguments

3. Applicant's arguments filed on May 9, 2008 with respect to the claims have been considered but are moot in view of the new grounds of rejection presented herein.

Election/Restrictions

4. Claims 76 through 93 hereby remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on January 12, 2007.

Drawings

5. The drawings filed on October 5, 2007 are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the features canceled from the claims: the micro-scaled regions being wider than the heat source and defining an overhang of the heat source in an embodiment of the fluid-cooled device including a plurality of parallel micro-scaled regions with a plurality of inlet and exhaust channels interleaved therebetween as newly recited in claims 3, 50, and 95 (note that NO such embodiment is supported by the originally filed disclosure); and, the spreader region interposed between the heat source and the micro-scaled regions in an embodiment of the fluid-cooled device including a plurality of parallel micro-scaled regions with a plurality of inlet and exhaust channels interleaved therebetween as newly recited in claims 25 and 72 (note that NO such embodiment is supported by the originally filed disclosure). Since no new

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matter should be entered, it is recommended that the aforementioned features be cancelled from the claims in order to overcome the instant objection to the drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: For example, there appears to be no antecedent basis in the claims for the newly recited limitations relating to the plurality of inlet channels and to the plurality of exhaust channels (the word exhaust fails to even appear anywhere in the originally filed specification, with only the word "outlet" appearing therein).

Claim Objections

7. Claim 70 is objected to because of the following informalities: "between the the" appearing in line 1 of the claim should be replaced by “between the”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

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8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1 through 75 and 94 through 109 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

For example, even though each of base claims 1, 48, and 94 as amended now recites that the direction of fluid flow in adjacent micro-scaled regions is in substantially opposite directions, the originally filed disclosure fails to clearly describe, illustrate, or otherwise unequivocally disclose or suggest that the direction of flow in adjacent micro-scaled regions is in substantially opposite directions.

Furthermore, each of base claims 1 and 48 as amended now newly recites that the inventive device comprises a plurality of inlet and exhaust channels interleaved between a plurality of substantially parallel micro-scaled regions, as well as a spreader region wherein one side of the spreader region is positioned on and coupled to a heat source while another side of the spreader region is coupled to the micro-scaled regions. While the embodiment of Figure 3A as originally filed indeed appears to show a plurality of substantially parallel micro-scaled regions 304 having a plurality of channels 302' and 303' interleaved therebetween as well as a spreader region 301, the embodiment of Figure 3A as illustrated and the corresponding description in the originally filed specification fail to show, describe, or suggest a spreader region 301 having one side positioned on and coupled to a heat source and another side coupled to the plurality of micro-scaled regions. No such combination is either clearly disclosed or otherwise suggested by the originally filed disclosure.

Additionally, each of claims 3, 50, and 95 as amended now newly recites that the inventive device comprises a plurality of inlet and exhaust channels interleaved between a plurality of substantially

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parallel micro-scaled regions, as well as a spreader region and a heat source wherein each of the spreader region and the micro-scaled regions are wider than the heat source, thus defining an overhang of the heat source. Again, the only embodiment encompassing a plurality of inlet and exhaust channels interleaved between a plurality of substantially parallel micro-scaled regions is depicted in Figure 3A, but neither Figure 3A nor the corresponding description in the originally filed specification shows the micro-scaled regions 304 as being wider than the heat source, thus defining an overhang of the heat source.

Finally, each of claims 25 and 72 newly recites the spreader region as being interposed between the heat source and the micro-scaled regions in the an inventive fluid-cooled device which also includes a plurality of parallel micro-scaled regions with a plurality of inlet and exhaust channels interleaved therebetween as newly recited in claims 25 and 72; however, the originally filed disclosure fails to describe or suggest any such embodiment of the inventive fluid-cooled device.

Therefore, the newly added limitations in the claims corresponding to the aforementioned features appear to constitute new matter which was not in the possession of the inventors at the time of the filing of the instant application.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1 through 75 and 94 through 109 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to each of base claims 1 and 48 as amended, the newly added limitations “wherein a **direction** of fluid flow in adjacent micro-scaled regions **is in substantially opposite directions**” and “wherein **the direction of fluid flow** at the exhaust side in adjacent micro-scaled regions **is in substantially opposite directions**” are not clear as written, thus rendering indefinite the metes and bounds of protection sought by the claims. Each of these limitations specifies that one direction of flow is

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also in substantially opposite and plural directions. Especially since the specification as originally filed fails to offer any clarification, it is not clear whether, for example, the aforementioned limitations are intended to mean that the direction of fluid flow in adjacent micro-scaled regions becomes or splits into two opposite directions or that the direction of fluid flow in any given micro-scaled region is opposite to the direction of fluid flow in all adjacent micro-scaled regions or whether one or more explanatory words are missing following the phrase “opposite directions” in each of these limitations. Furthermore, it appears, as written, that the limitation “the direction of fluid flow at the exhaust side” in each of these claims attempts to refer back to the limitation “a direction of fluid flow in adjacent micro-scaled regions” appearing earlier in each of these claims, but it is not clear that the earlier limitation indeed provides proper antecedent basis because the earlier limitation does not appear to refer to the same direction of the same fluid flow, thus further adding to the indefiniteness of the claims. The limitation “produces a **fluid flow that is in substantially opposing directions**” in base claim 94 is similarly not clear as written and similarly renders claim 94 and all claims depending therefrom indefinite.

Also, it appears that the limitations in claims 30 through 36 relating to the plurality of manifolding layers, to the interwoven manifolds, and to the plurality of fluid paths are duplicative of the newly added limitations relating to the plurality of interleaved inlet and exhaust channels as now recited in base claim 1 from which claims 30 through 36 depend, thus further rendering indefinite the metes and bounds of protection sought by the claims.

12. Claims 1 through 75 and 94 through 109 currently stand rejected under 35 U.S.C. 112, 1st and 2nd paragraphs, only, as set forth in this Office action above. This should not, however, be construed as an indicator of allowable subject matter, but rather as an indicator of the extent to which the intended scope of protection sought by the claims fails to both correspond in scope to the originally filed disclosure and to be clearly set forth as required, thus making a clear determination of patentability over the prior art difficult at this time. Since these claims may be significantly broadened or otherwise changed in

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overcoming the aforementioned rejections, no final determination as to any allowable subject matter may be made without further consideration following any proposed amendments to the claims to overcome the abovementioned rejections of the claims.

Conclusion

13. The additional prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ljiljana (Lil) V. Ciric whose telephone number is 571-272-4909. The examiner works a flexible work schedule but can normally be reached on most days during the work week between the hours of 10:30 a.m. and 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J. Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ljiljana (Lil) V. Ciric/

Primary Examiner, Art Unit 3744